MOBILE: 9945744759

SHRIYA CONSTRUCTION AND CONSULTANCY

#1133, 3rd Floor, 3rd Stage, 'B' Cross, Yelahanka New Town Bangalore 560064.

No. BBMP /PMC/B-D/KODI/2022-23 **Date:**

To,
The Executive Engineer,
Batarayanapura Divison,
Bangalore 560092.

SUB: PMC CERTIFICATE

Dear Sir,

This is to certify that all the items of Works have been carried our satisfactorily as per specifications and the details below.

Name of Work :- Improvements to Roads and drais in Tatanagara, Devinagara and surrounding areas in ward no -08, Kodigehalli

Job code: **008-22-000003.**

Work Order No: **BBMP/EE/BTP/WO/60/2022-23, Dated 18.03.2022**

Bill Number: First & Final Bill.

Name of contractor: Sri K M Nagesh.

Value of Work:

BR No.

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#1133, 3rd Floor, 3rd Stage, 'B' Cross, Yelahanka New Town Bangalore 560064.

Sl No	Description of Work	Unit	BOQ Quantity	EXE Quantity
1	Earthwork excavation by manual means for roads, drains & similar works in ordinary soil excavated surface levelled and sides neatly dressed, the disposed earth to be levelled neatly after breaking of clods complete as per specifications.	CUM	952.44	952.44
2	Providing and laying Plain cement concrete 1:3:6 mix with OPC 220kgs with crushed stone aggregate 40 mm and down size graded granite metal coarse aggregates @0.892Cum and fine aggregates @ 0.465Cum machine mixed, machine mixed, concrete laid in layers not exceeding 15 cms. thick, well compacted, in foundation, including cost of all materials, labour, HOM curing complete as per specifications.	CUM	126.78	126.78
3	Providing T.M.T bars Fe 500 steel reinforcement for R.C.C work including straightening, cutting, bending, hooking, placing in position, lapping and / or welding wherever required, tying with binding wire and anchoring to the adjoining members wherever necessary complete as per design (laps, hooks and wastage shall not be measured and paid) cost of materials, labour, HOM of machinery complete as per specifications.	MT	15.81	15.81

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4	Providing laying plain/ reinforced cement concrete for side Drains Using M20 nominal mix Concrete with OPC at 300kgs.With 20mm and Down size granite metal coarse aggregate at 0.69Cum and fine aggregate at 0.43Cum Machne mixed, well compacted for wall and Bottom including centering shuttering,cost of materials,HOM of Machinery,Curing Etc.,Complete Excluding cost of Steel as per morth MORTH specification No. 1500, 1700, 2200. Including Cost of material, Labour, HOM complete as per Specification WALL & Bottom thickness 15Cm	CUM	280.91	280.91
5	Providing and Fixing Pre cast covering Slab 100mm thick made out of CC, jelly 20mm Down size with steel reinforcement including form work,curing,including cost of alll materials, labour,hire charges of machinery, loading, unloading, lead and lift,transportation etc ,complete.As per Engineer incharge.	SQM	679.01	679.01
6	Supply and fixing Precast reinforced concrete slab 250cm thick including cost of reinforcement as per design and drawing, material cost, transportation, hire charges of machinery, machine cutting the vertical face to get plain even surface etc., complete with all leads and lift conveynce charges, labour charges inclusive of cost of all materials.	SQM	38.88	38.88
7	Providing and laying in position plain cement concrete of Mix 1:2:4 with OPC @ 240kgs, with 20mm and down size graded granite metal coarse aggregates @ 0.878 Cum and fine aggregtes @ 0.53Cum, machine mixed, concrete laid in layers not exceeding 15 cms. thick, well compacted, in foundation, plinth and cills, including cost of all materials, labour, HOM curing complete as per specifications.	CUM	7.40	7.40

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8	Providing and fixing pre cast solid cement concrete kerb stones made out of CC 1:2:4 with top and bottom width 114 and 165 mm respectively, 400mm high and 450mm in length finished with CM 1:3 plastering and finishing cutting including formwork, curing, including cost of materials, labour charges of machinery, loading and unloading, lead and lift, transportation ete.,complete. As per the direction of Engineer incharge.	NOS	822.00	822.00
9	Providing and applying Painting in two coats with plastic emulsion paint of approved brand on wall surace to given an approved shade after throughly brushing the surfce, free from mortordrops and other foreign matter including preparing the surface even and sand paper smooth, cost of materials, labour complete as per specifications. with primer coat	SQM	129.46	129.46
10	Excavation for roadwork in all types of soil by mechanical means including cutting and loading to tippers, trimming bottom and side slopes, in accordance with requirements of lines, grades and cross sections, and transportation with a lead of 1.00 km and complete as per specifications MORTH Specificatio MORTH Specification No.301Loading and unloading	Cum	188.25	188.25
11	Compaction of original ground by mechanical means including filling in depression occuring during rolling including cost of all labour, HOM complete as per specifications.	SQM	627.50	627.50

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#1133, 3rd Floor, 3rd Stage, 'B' Cross, Yelahanka New Town Bangalore 560064.

12	Providing, laying, spreading and compacting cushed stone aggregates of granite / trap / basalt to wet mix macadam specifications including pre mixing the material with water at OMC in mechanical mix plant carriage of mixed materials by tipper to site, laying in uniform layers with paver in sub-base/base course on well prepared surface and compacting with vibratory roller to achieve the desired density complete as per specifications	CUM	94.13	94.13
13	Cleaning the existing black topped surface with brooms, soft brushes and finally dusting with old gunny bags and / or compressed air to receive bituminous treatment including cost of all materials, labour, HOM of machineries complete with all lead and lift as per the direction of engineer-in-charge	SQM	2725.00	2725.00
14	Providing and applying primer coat with S.S. bitumen emulsion on prepared surface of granular base such as WMM including cleaning of road surface and spraying primer at the rate of 0.60 kg / Sqm using mechanical means complete as per specifications Clause 502 of MORTH V revision	SQM	627.50	627.50
15	Providing, laying dense graded bituminous macadam using 40/60 TPH capacity H.M.P with Mechanical paver Gr-II (50mm to 75mm), crushed aggregates of specified grading premixed with 4.5% VG 30 grade bituminous binder and , transporting the hot mix to work site , laying to the required level and grade, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH table 500-10 complete in all respects complete as per specifications	CUM	49.08	49.08

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16	Providing and applying tack coat using 80/100 grade bitumen(VG10) on the prepared black topped surfaces at 2.5 kg per 10 Sqm, heating bitumen in boiler fitted with spray set (excluding cleaning of road surface) including cost of all materials, labour, HOM complete as per specifications	SQM	3079.00	3079.00
17	Providing and laying bituminous concrete 40 mm thick with hot mix plant, using crushed aggregates of specified grading, premixed with bituminous binder and filler, transporting the hot mix to work site, laying with a paver finisher to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification clause No. 500.9 complete in all respects complete as per specifications. MORTH Specification No. 509 - using40/60 TPH capacity H.M.P. with Mechanical Paver Gr-II (30 mm to 45 mm) with 5.4 % VG-30 Bitumen	CUM	123.16	123.16
18	Road Marking with Hot Applied Thermoplastic Compound with Reflectrising Glass Beads on Bituminous Surface/ Concrete Surface: Providing and laying of hot applied thermoplastic compound 2.5 mm thick including reflectorising glass beads at 250 gms per Sqm area, thickness of 2.5 mm is exclusive of surface applied glass beads as per IRC:35 standards specified. The finished surface to be level, uniform and free from streaks and holes complete as per specifications.	SQM	94.75	94.75

SHRIYA CONSTRUCTION AND CONSULTANCY

QC ABSTRACT

NAME OF WORK: Improvements to roads and drains in Tatanagara, Devinagara and Surrounding areas in ward No. 08, Kodigehalli.

SL NO	Item Of Work	Name of Test	Frequency of Test/Quantity	Executed Quantity	Number of Tests Required	Number of Tests Conducted
		Materials				
1	Cement	Fineness by dry sieving	One Test		1	1
		Finess by Air permeablity method	One Test		1	1
		Density	One Test		1	1
		Standard Consistency	One Test		1	1
		Initial Setting time	One Test		1	1
		Final Setting time	One Test		1	1
		Soundness (Le Chatelier's Method)	One Test		1	1
		Compressive Strength	One Test		1	1
2	Coarse aggregate(40 mm down size)	SIEVE ANALYSIS	One Test		1	1
		Flakiness Index	One Test		1	1
		Elongation Index	One Test		1	1
		Specific Gravity	One Test		1	1
		Bulk Density(Loose)	One Test		1	1
		Bulk Density(Compacted)	One Test		1	1
		Water Absorption	One Test		1	1
3	Coarse aggregate(20 mm down size)	SIEVE ANALYSIS	One Test		1	1
		Flakiness Index	One Test		1	1
		Elongation Index	One Test		1	1
		Specific Gravity	One Test		1	1
		Bulk Density(Loose)	One Test		1	1
		Bulk Density(Compacted)	One Test		1	1
		Water Absorption	One Test		1	1
		Aggregate crushing Value	One Test		1	1
		Aggregate Impact Value	One Test		1	1
4	Fine aggregate	SIEVE ANALYSIS	One Test		1	1
		Water Absorption	One Test		1	1
		Specific Gravity	One Test		1	1
		Material finer than 75 micron	One Test		1	1
5	Steel	Bend test	One Test		1	1
		Tensile Test	One Test		1	1
		Yield Test	One Test		1	1
		ReBend test	One Test		1	1
6	KERB	Core Compressive strength	One Test		1	1
		Corrected Cylinder Compressive strength	One Test		1	1
		Equivalent Cube Compressive strength	One Test		1	1
7	Precast (100mm)	Core Compressive Strength	One Test		1	1
		Corrected Cylinder Compressive Strength	One Test		1	1
		Equivalent Cube Compressive Strength	One Test		1	1

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BBMP, Bangalore

SHRIYA CONSTRUCTION AND CONSULTANCY

8	Precast (250mm)	Core Compressive Strength	One Test		1	1
		Corrected Cylinder Compressive Strength	One Test		1	1
		Equivalent Cube Compressive Strength	One Test		1	1
9	RCC(M20)	Compressive Strength(7days and 28days)	1 set		2	2
10	WMM	Sieve Analysis	One Test		1	1
		Impact Value	One Test		1	1
		Flakiness Index	One Test		1	1
		Elongation Index	One Test		1	1
11	BM	SIEVE ANALYSIS	One Test		1	1
		STRIPPING VALUE	One Test		1	1
		Flakiness Index	One Test		1	1
		Elongation Index	One Test		1	1
		IMPACT VALUE	One Test		1	1
		Specific gravity	One Test		1	1
		Water Absorption	One Test		1	1
		Marshal Stability	One Test		1	1
		Marshal flow	One Test		1	1
		Percent air Voids	One Test		1	1
		Percent Voids in mineral Aggregate	One Test		1	1
		Percent Voids filled with Bitumen	One Test		1	1
		Density	One Test		1	1
		Gradation	One Test		1	1
12	BC	SIEVE ANALYSIS	One Test		1	1
		STRIPPING VALUE	One Test		1	1
		Flakiness Index	One Test		1	1
		Elongation Index	One Test		1	1
		IMPACT VALUE	One Test		1	1
		Specific gravity	One Test		1	1
		Water Absorption	One Test		1	1
		Marshal Stability	One Test		1	1
		Marshal flow	One Test		1	1
		Percent air Voids	One Test		1	1
		Percent Voids in mineral	One Test		1	1
		Percent Voids filled with Bitumen	One Test		1	1
		Density	One Test		1	1
		Gradation	One Test		1	1
13	BITUMEN	Ductility	One Test		1	1
		Softening Point	One Test		1	1
		Penetration	One Test		1	1
		Flash Point	One Test		1	1
		Fire Point	One Test		1	1
14	TACK COAT	Rate of spread	One Test		1	1

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

SHRIYA CONSTRUCTION AND CONSULTANCY

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TEST REPORT OF PHYSICAL PROPERTIES OF CEMENT - 53 Grade

Lab ID	:	**CP-2023-03-30-37** **Date: 13-04-22**
Customer	:	Assistant Executive Engineer, Kodigehalli Sub Division, BBMP,
Address	:	Kodigehalli Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to roads and drains in Tatanagara, Devinagara and Surrounding areas in ward No. 08, Kodigehalli.
Agency	:	Sri. K M Nagesh, No:35/1, 19th B Main 14th Cross, 1st Block, Rajajinagara, Bangalore-560010
Customer's Reference	:	BBMP/EE/BTP/WO/60/2021-22
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	09-04-22
Sample Type	:	Birla Super 53grade
Reference to BIS codes	:	IS 269:2015 Ordinary Portland cement Specification , IS 4031 (Part 4,5):1988 IS 4031 Part 1 (RA 2021) DETERMINATION OF FINENESS BY DRY SIEVING, Clause 4.4 IS 4031 Part 2, (RA 2018) Determination of Fineness by Blaine Air Permeability Method, Clause 5 IS 4031 Part 3, (RA 2019) Determination of Soundness, Clause 5, Clause 6 IS 4031 Part 4, (RA 2019) Determination of Consistency of Standard Cement Paste, Clause 5 IS 4031 Part 5, (RA 2019) Determination of Initial & Final Setting Time, Clause 5 IS 4031 Part 11, (RA 2019)DETERMINATION OF DENSITY , Clause 6
Date of test	:	09-04-22
Environmental Conditions during test	:	Temperature: 26°C Humidity: 72%

Sl.No.	Physical properties	Results	Requirement as per IS 269:2015
1	Fineness by dry sieving (%)	2.25	_
2	Finess by Air permeablity method (m^2/kg,Min)	282.5	225m^2/kg, Min
3	Density (gm/cc)	3.15	_
4	Standard Consistency (%)	28%	Not specified
5	Initial Setting time	135 minutes	Not less than 30 minutes
6	Final Setting time	250 minutes	Not more than 600 minutes
7	Soundness (Le Chatelier's Method)	2.0mm	Not more than 10 mm

* The results obtained are satisfactory as per standard requirements.

Note:

The results pertain to the samples received and tested.

All information furnished by Agency/Representative

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Samples will be disposed after 30 days from the date of issue of test certificate

SHRIYA CONSTRUCTION AND CONSULTANCY

FOR CIVIL Pro.

R KARTHIK RECHAN
Authorized Signatory
Quality Manager

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

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****End of Report****

Format No: CP/TF/01

TEST REPORT OF PHYSICAL PROPERTIES OF CEMENT - 53 Grade

Lab ID	:	**CP-2023-03-30-37** **Date: 07-05-22**
Customer	:	Assistant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.
Address	:	Kodigehalli Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to roads and drains in Tatanagara, Devinagara and Surrounding areas in ward No. 08, Kodigehalli.
Agency	:	Sri. K M Nagesh, No:35/1, 19th B Main 14th Cross, 1st Block, Rajajinagara, Bangalore-560010
Customer's Reference	:	BBMP/EE/BTP/WO/60/2021-22
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	09-04-22
Sample Type	:	Birla Super 53grade
Reference to BIS codes	:	IS 269:2015 Ordinary Portland cement Specification , IS 4031 (Part 4,5):1988 IS 4031 Part 4, (RA 2019) Determination of Consistency of Standard Cement Paste, Clause 5 IS 4031 Part 6, (RA 2019) Determination of Compressive Strength, Clause 6
Date of test	:	09-04-22
Environmental Conditions during test	:	Temperature: 26°C Humidity: 72%

Compressive Strength

Sl.No.	Physical properties	Results	Requirement as per IS 269:2015
1	3 Days	29.5N/mm^2	Not less than 27 N/mm^2
2	7 Days	39.5N/mm^2	Not less than 37 N/mm^2
3	28 Days	56.5N/mm^2	Not less than 53 N/mm^2

* The results obtained are satisfactory as per standard requirements.

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SHRIYA CONSTRUCTION AND CONSULTANCY

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

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R KARTHIK RECHAN
Authorized Signatory
Quality Manager

****End of Report****

Format No: CP/TF/01

TEST REPORT ON COARSE AGGREGATES

Lab ID	:	**CP-2023-03-30-37** **Date: 13-04-22**
Customer	:	Assistant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.
Address	:	Kodigehalli Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to roads and drains in Tatanagara, Devinagara and Surrounding areas in ward No. 08, Kodigehalli.
Agency	:	Sri. K M Nagesh, No:35/1, 19th B Main 14th Cross, 1st Block, Rajajinagara, Bangalore-560010
Customer's Reference	:	BBMP/EE/BTP/WO/60/2021-22
Source of Sample	:	Sample supplied by Agency
Sample condition	:	Satisfactory
Date of Receipt	:	09-04-22
Sample Type	:	40mm down size coarse aggregate
Reference to BIS codes	:	IS: 383:2016 (Specification for Coarse and fine Aggregates) IS: 2386 :1963(Part - 1,3,4) RA2021 IS 2386 Part 1: Particle Size and Shape IS 2386 Part 3: Specific gravity, Density, Voids,Water Absorption IS 2386 Part 4: Mechanical Properties
Date of test	:	09-04-22

SIEVE ANALYSIS (PARTICLE SIZE DISTRIBUTION) OF 40MM DOWN COARSE AGGREGATE:

Total weight taken : 15000 grams

Sample No.	Sieve No.	Weight Retained in gms	Cumulative Weight Retained in gms	% Cumulative Weight Retained	% Passing	Required as per IS 383:2016
1	80 mm	0	0	0.0	100	100
2	40 mm	342	342	2.3	97.7	90-100
3	20 mm	5439	5781	38.5	61.5	30-70
4	10 mm	4579	10360	69.1	30.9	10-35
5	4.75 mm	4260	14620	97.5	2.5	0-5
6	Pan	380	15000	100.0	0	---

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

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SHAKTHIYA CONSTRUCTION AND CONSULTANCY

M : 9972924526 | Tel : +91 80 23444801 | e : rechan6630@yahoo.co.in, civilproexperts@gmail.com

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TEST REPORT ON COARSE AGGREGATES

Lab ID : **CP-2023-03-30-37** **Date: 13-04-22**

PHYSICAL PROPERTIES

Sl.no	Tests	Result	Requirements as per IS:383-2016
1	Flakiness Index(%)	**12.4**	Combined Flakiness & Elongation Index Shall not Exceed 40% for Uncrushed & Crushed Aggregate
2	Elongation Index(%)	**11.6**	
3	Specific Gravity	**2.67**	_
4	Bulk Density(Loose) (Kg/l)	**1.54**	_
5	Bulk Density(Compacted) (Kg/l)	**1.58**	_
6	Water Absorption(%)	**0.21**	_

* The results obtained are satisfactory as per standard requirements.

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R KARTHIK RECHAN
Authorized Signatory
Quality Manager

****End of Report****

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

SHRIYA CONSTRUCTION AND CONSULTANCY

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TEST REPORT ON COARSE AGGREGATES

Lab ID	:	**CP-2023-03-30-37** **Date: 13-04-22**
Customer	:	Assistant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.
Address	:	Kodigehalli Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to roads and drains in Tatanagara, Devinagara and Surrounding areas in ward No. 08, Kodigehalli.
Agency	:	Sri. K M Nagesh, No:35/1, 19th B Main 14th Cross, 1st Block, Rajajinagara, Bangalore-560010
Customer Reference	:	BBMP/EE/BTP/WO/60/2021-22
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	09-04-22
Sample Type/ Size	:	20mm down size coarse aggregate
Reference to BIS codes	:	IS: 383:2016 (Specification for Coarse and fine Aggregates) IS: 2386 :1963(Part - 1,3,4) RA2021 IS 2386 Part 1: Particle Size and Shape IS 2386 Part 3: Specific gravity, Density, Voids,Water Absorption IS 2386 Part 4: Mechanical Properties
Date of test	:	09-04-22

SIEVE ANALYSIS (PARTICLE SIZE DISTRIBUTION) OF 20MM DOWN COARSE AGGREGATE:

Total weight taken : 5000 grams

Sample No.	Sieve No.	Weight Retained in gms	Cumulative Weight Retained in gms	% Cumulative Weight Retained	% Passing	Required as per IS 383:2016
1	40 mm	0	0	0	100	100
2	20 mm	214	214	4.3	95.7	90-100
3	10 mm	2435	2649	53.0	47.0	25-55
4	4.75 mm	2134	4783	95.7	4.3	0-10
5	Pan	217	5000	100	0	_

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

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TEST REPORT ON COARSE AGGREGATES

Lab ID : **CP-2023-03-30-37** **Date: 13-04-22**

PHYSICAL PROPERTIES

Sl.no	Tests	Result	Requirements as per IS:383-2016
1	Flakiness Index(%)	13.2	Combined Flakiness & Elongation Index Shall not Exceed 40% for Uncrushed & Crushed Aggregate
2	Elongation Index(%)	12.4	
3	Specific Gravity	2.69	–
4	Bulk Density(Loose) (Kg/l)	1.48	–
5	Bulk Density(Compacted) (Kg/l)	1.53	–
6	Water Absorption(%)	0.22	–
7	Aggregate crushing Value(%)	22.9	Max 30% for Aggregates to be used in concrete for wearing Surface, In case Aggregate Crushing Value Exceeds 30% then the test for ten percent fines should be conducted for Aggregates to be used in concrete other than for wearing Surface.
8	Aggregate Impact Value(%)	22.1	30% for Aggregates to be used in concrete for wearing Surface, 45% for Aggregates to be used in concrete other than for wearing Surface.

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Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

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FOR CIVIL Pro.

R KARTHIK RECHAN
Authorized Signature
Quality Manager

End of Report

SHRIYA CONSTRUCTION AND CONSULTANCY

Format No: CP/TF/01

TEST REPORT OF FINE AGGREGATE

Lab ID	:	**CP-2023-03-30-37** **Date: 13-04-22**
Customer	:	Assistant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.
Address	:	Kodigehalli Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to roads and drains in Tatanagara, Devinagara and Surrounding areas in ward No. 08, Kodigehalli.
Agency	:	Sri. K M Nagesh, No:35/1, 19th B Main 14th Cross, 1st Block, Rajajinagara, Bangalore-560010
Customer's Reference	:	BBMP/EE/BTP/WO/60/2021-22
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	09-04-22
Sample Type	:	Fine Aggregate
Reference to BIS codes	:	IS 383 : 2016 (Specification for Coarse and fine Aggregates) IS: 2386 :1963(Part - 1, 3) RA2021 IS 2386 Part 1: Particle Size and Shape IS 2386 Part 3: Specific gravity, Density, Voids,Water Absorption
Date of test	:	09-04-22
Total weight taken	:	1000 grams

Sl.no	Sieve Size	Weight Retained (gms)	Cumulative Weight Retained (gms)	% Cumulative Weight Retained	% Passing	Requirement as per IS 383:2016			
						Grading Zone I	Grading Zone II	Grading Zone III	Grading Zone IV
1	10 mm	0	0	0.0	100.0	100	100	100	100
2	4.75 mm	82	82	8.2	91.8	90-100	90-100	90-100	95-100
3	2.36 mm	133	215	21.5	78.5	60-95	75-100	85-100	95-100
4	1.18 mm	179	394	39.4	60.6	30-70	55-90	75-100	90-100
5	600 micron	186	580	58.0	42.0	15-34	35-59	60-79	80-100
6	300 micron	173	753	75.3	24.7	5-20	8-30	12-40	15-50
7	150 micron	156	909	90.9	9.1	0-10	0-10	0-10	0-15
8	Pan	91	1000	100.0	0.0	---	---	---	---

Result :The tested Sample Conforms to Grading Zone II

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

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TEST REPORT OF FINE AGGREGATE

Lab ID : **CP-2023-03-30-37** **Date: 13-04-22**

PHYSICAL PROPERTIES

Sl.no	Tests	Result	Requirements as per IS 383:2016
1	Water Absorption(%)	1.42	–
2	Specific Gravity	1.58	–
3	Material finer than 75 micron(%)	9.1	Uncrushed fine Aggregate Max 3%, Crushed Fine aggregate Max 15%, Mixed Fine aggregate Max 12%, Manufactured Fine aggregate Max 10%

* The results obtained are satisfactory as per standard requirements.

Note:

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Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

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TEST RESULTS OF STEEL

Lab ID	:	**CP-2023-03-30-37** **Date: 13-04-22**
Customer	:	Assistant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.
Address	:	Kodigehalli Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to roads and drains in Tatanagara, Devinagara and Surrounding areas in ward No. 08, Kodigehalli.
Agency	:	Sri. K M Nagesh, No:35/1, 19th B Main 14th Cross, 1st Block, Rajajinagara, Bangalore-560010
Customer's Reference	:	BBMP/EE/BTP/WO/60/2021-22
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	09-04-22
Sample Type	:	Sunvik
Reference to BIS codes	:	IS 1786-2008, IS:1608-2005(RA 2011), IS 1599-2019.
Date of test	:	09-04-22

Sl.No	Identification of sample	Grade of the sample	Diameter of the steel bar	Weight of the sample	Yield stress	Tensile strength	Elongation	Bend test	Rebend test
			(mm)	(kg/m)	(N/mm2)	(N/mm2)	(%)		
2	Sunvik	Fe500	10	0.616	528	672	20.0%	Satisfactory	Satisfactory
3	Sunvik	Fe500	12	0.888	544	668	20.0%	Satisfactory	Satisfactory

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Kodigehalli Sub Division
BBMP, Bangalore

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Authorized Signatory
Quality Manager

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Format No: CP/TF/01

TEST REPORT OF PRECAST COVER SLAB

Lab ID	:	**CP-2023-03-30-37** **Date: 15-05-22**
Customer	:	Assistant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.
Address	:	Kodigehalli Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to roads and drains in Tatanagara, Devinagara and Surrounding areas in ward No. 08, Kodigehalli.
Agency	:	Sri. K M Nagesh, No:35/1, 19th B Main 14th Cross, 1st Block, Rajajinagara, Bangalore-560010
Customer's Reference	:	BBMP/EE/BTP/WO/60/2021-22
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	11-05-22
Sample Type /Size	:	Precast Cover Slab-100mm Thick
Reference to BIS codes	:	IS: 516 - 1959 (RA 2018) Methods of Tests for Strength of Concrete
Date of test	:	11/05/2022

Sl. No.	Identification Mark	Diameter of the core	Height of the core	Weight of the core	Area	Failure Load	Core Compressive strength	Corrected Cylinder Compressive strength	Equivalent Cube Compressive strength
		(mm)	(mm)	(kg)	(Sq.mm)	(KN)	(N/mm^2)	(N/mm^2)	(N/mm^2)
1	Cover Slab-1	77.51	100.38	1.116	4718	102.5	21.7	20.2	25.3
2	Cover Slab-2	77.43	100.42	1.122	4708	103.4	22.0	20.4	25.5
3	Cover Slab-3	77.54	100.51	1.118	4721	106.7	22.6	21.0	26.3

* The results obtained are satisfactory as per standard requirements.

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Quality Manager

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Kodigehalli Sub Division
BBMP, Bangalore

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Format No: CP/TF/01

TEST REPORT OF PRECAST COVER SLAB

Lab ID	:	**CP-2023-03-30-37**	**Date: 15-05-22**
Customer	:	Assistant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.	
Address	:	Kodigehalli Sub Division, BBMP, Bangalore.	
Project Name	:	Improvements to roads and drains in Tatanagara, Devinagara and Surrounding areas in ward No. 08, Kodigehalli.	
Agency	:	Sri. K M Nagesh, No:35/1, 19th B Main 14th Cross, 1st Block, Rajajinagara, Bangalore-560010	
Customer's Reference	:	BBMP/EE/BTP/WO/60/2021-22	
Source of Sample	:	Sample supplied by Agency	
Sample Condition	:	Satisfactory	
Date of Receipt	:	11-05-22	
Sample Type /Size	:	Precast Cover Slab-250mm Thick	
Reference to BIS codes	:	IS: 516 - 1959 (RA 2018) Methods of Tests for Strength of Concrete	
Date of test	:	11/05/2022	

Sl. No.	Identification Mark	Diameter of the core	Height of the core	Weight of the core	Area	Failure Load	Core Compressive strength	Corrected Cylinder Compressive strength	Equivalent Cube Compressive strength
		(mm)	(mm)	(kg)	(Sq.mm)	(KN)	(N/mm^2)	(N/mm^2)	(N/mm^2)
1	Cover Slab-1	77.51	250.38	1.116	4718	103.5	21.9	20.4	25.5
2	Cover Slab-2	77.43	250.36	1.122	4708	104.5	22.2	20.6	25.8
3	Cover Slab-3	77.54	250.49	1.118	4721	106.7	22.6	21.0	26.3

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Kodigehalli Sub Division
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Format No: CP/TF/01

TEST REPORT OF CEMENT CONCRETE KERB STONE

Lab ID	:	**CP-2023-03-30-37**	**Date: 20-04-22**
Customer	:	Assistant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.	
Address	:	Kodigehalli Sub Division, BBMP, Bangalore.	
Project Name	:	Improvements to roads and drains in Tatanagara, Devinagara and Surrounding areas in ward No. 08, Kodigehalli.	
Agency	:	Sri. K M Nagesh, No:35/1, 19th B Main 14th Cross, 1st Block, Rajajinagara, Bangalore-560010	
Customer's Reference	:	BBMP/EE/BTP/WO/60/2021-22	
Source of Sample	:	Sample supplied by Agency	
Sample Condition	:	Satisfactory	
Date of Receipt	:	16-04-22	
Sample Type /Size	:	CC Kerb Stone/ 450*165*400mm	
Reference to BIS codes	:	IS: 516 - 1959 (RA 2018) Methods of Tests for Strength of Concrete	
Date of test	:	16/04/2022	
Grade of Kerb	:		

Sl. No.	Identification Mark	Diameter of the core	Height of the core	Weight of the core	Area	Failure Load	Core Compressive strength	Corrected Cylinder Compressive strength	Equivalent Cube Compressive strength
		(mm)	(mm)	Kg	(Sq.mm)	(KN)	(N/mm2)	(N/mm2)	(N/mm2)
1	A	77.02	165.48	2.925	4658	80.5	17.3	17.3	21.6
2	B	77.04	165.51	2.863	4661	82.4	17.7	17.7	22.1
3	C	77.01	165.52	2.756	4657	83.5	17.9	17.9	22.4

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Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

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Authorized Signatory
Quality Manager

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Format No: CP/TF/01

TEST REPORT OF CEMENT CONCRETE CUBES

Lab ID	:	**CP-2023-03-30-37** **Date: 27/04/2022**
Customer	:	Assistant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.
Address	:	Kodigehalli Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to roads and drains in Tatanagara, Devinagara and Surrounding areas in ward No. 08, Kodigehalli.
Agency	:	Sri. K M Nagesh, No:35/1, 19th B Main 14th Cross, 1st Block, Rajajinagara, Bangalore-560010
Customer's Reference	:	BBMP/EE/BTP/WO/60/2021-22
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	22-04-22
Customer ID	:	RCC
Sample Type /Size	:	150X150X150 mm
Sample grade/Age	:	M20 / 7 Days Compressive Strength
Reference to BIS codes	:	IS: 516 - 1959 (RA 2018) Methods of Tests for Strength of Concrete Cl.5
Date of test	:	27/04/2022

Sl. No.	Identification Mark	Grade of concrete	Date of Casting	Date of Testing	Dimension of the Specimen	Cross sectional area	Weight of the sample	Failure Load	Compressive strength	Average Compressive Strength
					(mm)	(Sq.mm)	(kg)	(KN)	(N/mm^2)	(N/mm^2)
1	RCC	M20	20/04/2022	27/04/2022	149.15 X 150.32 X 151.65	22420	8.317	420.3	18.7	18.9
2	RCC	M20	20/04/2022	27/04/2022	151.29 X 150.38 X 149.43	22751	8.865	429.3	18.9	
3	RCC	M20	20/04/2022	27/04/2022	149.97 X 151.82 X 149.15	22770	8.560	431.4	18.9	

* The results obtained are satisfactory as per standard requirements.

Note:

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Kodigehalli Sub Division
BBMP, Bangalore

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TEST REPORT OF CEMENT CONCRETE CUBES

Lab ID	:	**CP-2023-03-30-37** **Date: 18/05/2022**
Customer	:	Assistant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.
Address	:	Kodigehalli Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to roads and drains in Tatanagara, Devinagara and Surrounding areas in ward No. 08, Kodigehalli.
Agency	:	Sri. K M Nagesh, No:35/1, 19th B Main 14th Cross, 1st Block, Rajajinagara, Bangalore-560010
Customer's Reference	:	BBMP/EE/BTP/WO/60/2021-22
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	22-04-22
Customer ID	:	RCC
Sample Type /Size	:	150X150X150 mm
Sample grade/Age	:	M20 / 28 Days Compressive Strength
Reference to BIS codes	:	IS: 516 - 1959 (RA 2018) Methods of Tests for Strength of Concrete Cl.5
Date of test	:	18/05/2022

Sl. No.	Identification Mark	Grade of concrete	Date of Casting	Date of Testing	Dimension of the Specimen (mm)	Cross sectional area (Sq.mm)	Weight of the sample (kg)	Failure Load (KN)	Compressive strength (N/mm^2)	Average Compressive Strength (N/mm^2)
1	RCC	M20	20/04/2022	18/05/2022	149.29 X 150.45 X 150.56	22461	8.272	519.7	23.1	23.0
2	RCC	M20	20/04/2022	18/05/2022	151.41 X 149.98 X 149.27	22709	9.002	500.6	22.0	
3	RCC	M20	20/04/2022	18/05/2022	149.07 X 149.85 X 151.44	22339	9.041	533.2	23.9	

* The results obtained are satisfactory as per standard requirements.

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Kodigehalli Sub Division
BBMP, Bangalore

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R KARTHIK RECHAN
Authorized Signatory
Quality Manager

****End of Report****

M : 9972924526 | Tel : +91 80 23444801 | e : rechan6630@yahoo.co.in, civilproexperts@gmail.com

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TEST RESULTS OF GRADATION FOR WMM

Lab ID	:	**CP-RW-2023-03-30-37** **Date: 02-05-22**
Customer	:	Assistant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.
Address	:	Kodigehalli Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to roads and drains in Tatanagara, Devinagara and Surrounding areas in ward No. 08, Kodigehalli.
Agency	:	Sri. K M Nagesh, No:35/1, 19th B Main 14th Cross, 1st Block, Rajajinagara, Bangalore-560010
Customer Reference	:	BBMP/EE/BTP/WO/60/2021-22
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	30-04-22
Type of Mix	:	WMM (Wet Mix Macadam)
Date of Test	:	30-04-22
Oven Dry Weight	:	11000 Grams

IS Sieve Size(mm)	Weight Retained (gm)	Cumulative Weight Retained (gm)	% Cumulative Weight Retained	% Passing	Spec.I.Vide Table 400.13 MORTH Specification
53	0	0	0.0	100.0	100
45	320	320	2.9	97.1	95-100
22.4	2245	2565	23.3	76.7	60-80
11.2	2186	4751	43.2	56.8	40-60
4.75	2246	6997	63.6	36.4	25-40
2.36	1619	8616	78.3	21.7	15-30
0.6	625	9241	84.0	16.0	8-22
0.075	1321	10562	96.0	4.0	0-5

* The results obtained are satisfactory as per standard requirements.

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Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

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Authorized Signatory
Quality Manager

End of Report

TEST REPORT OF AGGEGRATE IMPACT VALUE
IS: 2386 Part IV

Lab ID	:	**CP-RW-2023-03-30-37**	**Date: 02-05-22**
Customer	:	Assistant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.	
Address	:	Kodigehalli Sub Division, BBMP, Bangalore.	
Project Name	:	Improvements to roads and drains in Tatanagara, Devinagara and Surrounding areas in ward No. 08, Kodigehalli.	
Agency	:	Sri. K M Nagesh, No:35/1, 19th B Main 14th Cross, 1st Block, Rajajinagara, Bangalore-560010	
Customer Reference	:	BBMP/EE/BTP/WO/60/2021-22	
Source of Sample	:	Sample supplied by Agency	
Sample Condition	:	Satisfactory	
Date of Receipt	:	30-04-22	
Type of Mix	:	Coarse Aggregate for WMM (Wet Mix Macadam)	
Date of Test	:	30-04-22	

Sl.No	Particulars of observations	Index	TEST 1	TEST 2
1	Total weight of the surface dry sample sample (passing 12.5 mm and retained on 10mm sieve)	A	300.2	300.2
2	Weight of fraction passing 2.36mm sieve After giving 15 blows	B	70.0	72.0
3	weight of fraction retained 2.36mm sieve After giving 15 blows	C	229.7	227.3
4	Total weight of (B+C) is less than the initial weight (Weight A) by more than one gram the result shall be discarded and a fresh test made.	A-(B+C)	0.5	0.9
5	Aggregate impact value	(B/A)*100	23.3	24.0
6	Aggregate impact value (Mean of two tests)	Pecentage	23.7	

* The results obtained are satisfactory as per standard requirements.

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Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

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R KARTHIK RECHAN
Authorized Signatory
Quality Manager

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DETERMINATION OF FLAKINESS INDEX AND ELONGATION INDEX OF COARSE AGGREGATE(IS 2386 (Part 1) 1963 (RA 2007)

Lab ID	:	**CP-RW-2023-03-30-37** **Date: 02-05-22**
Customer	:	Assistant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.
Address	:	Kodigehalli Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to roads and drains in Tatanagara, Devinagara and Surrounding areas in ward No. 08, Kodigehalli.
Agency	:	Sri. K M Nagesh, No:35/1, 19th B Main 14th Cross, 1st Block, Rajajinagara, Bangalore-560010
Customer Reference	:	BBMP/EE/BTP/WO/60/2021-22
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	30-04-22
Type of Mix	:	Coarse Aggregate for WMM (Wet Mix Macadam)
Date of Test	:	30-04-22

Result:

Index	Percentage of Flakiness and Elongation Index	Secified limits as per MORTH specification table 400-12
Flakiness Index	11.9%	Combined Flakiness & Elongation Index for WMM is Maximum 35%
Elongation Index	15.5%	
Combined Flakiness and Elongation Index for WMM	27.4%	

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Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

CIVIL Pro Sig. Date. BANGALORE

FOR CIVIL Pro.

R KARTHIK RECHAN
Authorized Signatory
Quality Manager

M : 9972924526 | Tel : +91 80 23444801 | e : rechan6630@yahoo.co.in, civilproexperts@gmail.com

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TEST RESULTS OF GRADATION FOR DBM
(IS 2386:(Part 1) 1963 (RA2011)

Lab ID	:	**CP-RW-2023-03-30-37** **Date: 09-05-22**
Customer	:	Assistant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.
Address	:	Kodigehalli Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to roads and drains in Tatanagara, Devinagara and Surrounding areas in ward No. 08, Kodigehalli.
Agency	:	Sri. K M Nagesh, No:35/1, 19th B Main 14th Cross, 1st Block, Rajajinagara, Bangalore-560010
Customer Reference	:	BBMP/EE/BTP/WO/60/2021-22
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	07-05-22
Type of Mix	:	DBM-Plant (Dense Bituminous Macadam)
Date of Test	:	07-05-22
Weight of Sample	:	5000 Grams

IS Sieve Size (mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Specification Limits as per MORTH specification Table 500-10 (grading -2)
37.5	0	0	0	100	100
26.5	153	153	3.06	96.94	90-100
19	1054	1207	24.14	75.86	71-95
13.2	584	1791	35.82	64.18	56-80
4.75	1788	3579	71.58	28.42	38-54
2.36	598	4177	83.54	16.46	28-42
0.3	292	4469	89.38	10.62	7-21
0.075	186	4655	93.10	6.90	2-8
PAN	345	5000	0.00	0	0

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Authorized Signatory
Quality Manager

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

CIVIL Pro Sig..... Date..... BANGALORE

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M : 9972924526 | Tel : +91 80 23444801 | e : rechan6630@yahoo.co.in, civilproexperts@gmail.com

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PHYSICAL REQUIREMENTS FOR COARSE AGGREGATE FOR DENSE BITUMINOUS MACADAM

Lab ID	:	**CP-RW-2023-03-30-37**	**Date: 10-05-22**
Customer	:	Assistant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.	
Address	:	Kodigehalli Sub Division, BBMP, Bangalore.	
Project Name	:	Improvements to roads and drains in Tatanagara, Devinagara and Surrounding areas in ward No. 08, Kodigehalli.	
Agency	:	Sri. K M Nagesh, No:35/1, 19th B Main 14th Cross, 1st Block, Rajajinagara, Bangalore-560010	
Customer Reference	:	BBMP/EE/BTP/WO/60/2021-22	
Source of Sample	:	Sample supplied by Agency	
Sample Condition	:	Satisfactory	
Date of Receipt	:	07-05-22	
Type of Mix	:	DBM (Dense Bituminous Macadam)	
Date of Test	:	07-05-22	

Table 500-6 : Physical Requirements fo Coarse Aggregate for Dense Bituminous Macadam

Property	Test	Result	Specification	Method of Test
Partical Shape	Flakiness Index	14.2	Combined Flakiness & Elongation Index for DBM is Maximum 35%	IS:2386 Part I
	Elongation Index	11.4		
Strength	Aggregate Impact Value	22.8	Maximum 30%	IS:2386 Part IV
Specific gravity	Specific gravity	2.62	Maximum 2.7	IS:2386 Part III
Water Absorption	Water Absorption	0.28	Maximum 2%	IS:2386 Part III

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Note:-

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R KARTHIK RECHAN
Authorized Signatory
Quallity Manager

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

CIVIL Pro Sig..... Date..... BANGALORE

M : 9972924526 | Tel : +91 80 23444801 | e : rechan6630@yahoo.co.in, civilproexperts@gmail.com

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TESTS RESULTS ON STABILITY OF MIX

Lab ID	:	**CP-RW-2023-03-30-37** **Date: 10-05-22**
Customer	:	Assistant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.
Address	:	Kodigehalli Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to roads and drains in Tatanagara, Devinagara and Surrounding areas in ward No. 08, Kodigehalli.
Agency	:	Sri. K M Nagesh, No:35/1, 19th B Main 14th Cross, 1st Block, Rajajinagara, Bangalore-560010
Customer Reference	:	BBMP/EE/BTP/WO/60/2021-22
Source of Sample	:	Hot Mix Plant, Bangalore
Sample Condition	:	Satisfactory
Date of Receipt	:	07-05-22
Type of Mix	:	DBM (Dense Bituminous Mecadam)
Date of Test	:	07-05-22

The results of the tests conducted on the Dense Bituminous Macadam mix sample are as follow

Sl.No	Particulars of observations	TEST 1	TEST 2	Secified limits as per MORTH specification table 500-11
1	Marshal Stability at 60°C, KN	11.98	11.49	9KN(Min)
2	Marshal flow at 60°C, mm	3.18	3.25	2-4
3	Percent air Voids	4.49	4.25	3-5
4	Percent Voids in mineral Aggregate(VMA %)	14.29	14.51	13-15
5	Percent Voids filled with Bitumen(VFB %)	67.54	68.43	65-75
6	Density, g/cc	2.41	2.41	–

* The results obtained are satisfactory as per standard requirements.

Note:-

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Assistant Executive Engineer
Kodigehalli Sub Divisi...
BBMP, Bangalore

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R KARTHIK RECHAN
Authorized Signatory
Quality Manager

End of Report

M : 9972924526 | Tel : +91 80 23444801 | e : rechan6630@yahoo.co.in, civilproexperts@gmail.com

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TEST REPORT OF AGGEGRATE STRIPPING VALUE OF ROAD AGGRGATE (IS:6241)

Lab ID	:	**CP-RW-2023-03-30-37** **Date: 10-05-22**
Customer	:	Assistant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.
Address	:	Kodigehalli Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to roads and drains in Tatanagara, Devinagara and Surrounding areas in ward No. 08, Kodigehalli.
Agency	:	Sri. K M Nagesh, No:35/1, 19th B Main 14th Cross, 1st Block, Rajajinagara, Bangalore-560010
Customer Reference	:	BBMP/EE/BTP/WO/60/2021-22
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	07-05-22
Type of Mix	:	DBM(Dense Bitumnous Macadam)
Date of Test	:	07-05-22

Type of Binder	:	60/70
% of Binder Used	:	4.5%
Weight of Aggregate	:	200.0 gm
Weight of Binder	:	9.0 gm
Temperature of water bath	:	40°C

No of test	Retained Stripping Percentage	Stripping Percentage	Average Retained Stripping Percentage	Secified limits as per MORTH specification table 500-8
1	98.0	2.0	98.2	Minimum Retained Coating 95%
2	98.5	1.5		
3	98.0	2.0		

* The results obtained are satisfactory as per standard requirements.

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Kodigehalli Sub Division
BBMP, Bangalore

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Authorized Signatory
Quality Manager

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TEST RESULTS OF BITUMEN BINDAR CONTENT AND GRADATION FOR DBM (IS 2386:(Part 1) 1963 (RA2011)

Lab ID	:	**CP-RW-2023-03-30-37** **Date: 13-05-22**
Customer	:	Assistant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.
Address	:	Kodigehalli Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to roads and drains in Tatanagara, Devinagara and Surrounding areas in ward No. 08, Kodigehalli.
Agency	:	Sri. K M Nagesh, No:35/1, 19th B Main 14th Cross, 1st Block, Rajajinagara, Bangalore-560010
Customer Reference	:	BBMP/EE/BTP/WO/60/2021-22
Source of Sample	:	Sample supplied by Agency
Date of Receipt	:	12-05-22
Type of Mix	:	DBM (Dense Bituminous Macadam)
Date of Test	:	12-05-22

Sl.no	Description	Index	Trail 1	Trail 2
1	Weight of the Sample	W1	500	500
2	Weight of the sample After extraction	W2	479	479.5
3	Initial weight of Paper	W3	4	4
4	Final weight of Paper	W4	6	6
5	Increase in weight of Filter Paper	W5=W4-W3	2	2
6	Bitumen percentage	$\frac{W1-W2+W5}{W1} \times 100$	4.6	4.50
7	Average percentage	%	4.55	

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

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FOR CIVIL Pro.
R KARTHIK RECHAN
Authorized Signatory
Quality Manager

M : 9972924526 | Tel : +91 80 23444801 | e : rechan6630@yahoo.co.in, civilproexperts@gmail.com

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Lab ID : **CP-RW-2023-03-30-37** **Date: 13-05-22**

AFTER EXTRACTION(Trail-1)

Weight of Sample(gm) : 479

IS Sieve Size(mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Specification Limits as per MORTH specification Table 500-10(grading -2)
37.5	0	0	0.0	100.0	100
26.5	11	11	2.3	97.7	90-100
19	32	43	9.0	91.0	71-95
13.2	98	141	29.4	70.6	56-80
4.75	95	236	49.3	50.7	38-54
2.36	82	318	66.4	33.6	28-42
0.3	65	383	80.0	20.0	7-21
0.075	60	443	92.5	7.5	2-8

AFTER EXTRACTION(Trail-2)

Weight of Sample(gm) : 479.5

IS Sieve Size(mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Specification Limits as per MORTH specification Table 500-10(grading -2)
37.5	0	0	0.0	100.0	100
26.5	12	12	2.5	97.5	90-100
19	35	47	9.8	90.2	71-95
13.2	101	148	30.9	69.1	56-80
4.75	98	246	51.3	48.7	38-54
2.36	88	334	69.7	30.3	28-42
0.3	62	396	82.6	17.4	7-21
0.075	49	445	92.8	7.2	2-8

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Quality Manager

Assistant Executive Engineer
Kodigehalli Sub Divisi
BBMP, Bangalore

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TEST RESULTS OF GRADATION FOR BC
IS 2386 (Part 1) 1963 (RA 2007)

Lab ID	:	**CP-RW-2023-03-30-37** **Date: 12-05-22**
Customer	:	Assistant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.
Address	:	Kodigehalli Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to roads and drains in Tatanagara, Devinagara and Surrounding areas in ward No. 08, Kodigehalli.
Agency	:	Sri. K M Nagesh, No:35/1, 19th B Main 14th Cross, 1st Block, Rajajinagara, Bangalore-560010
Customer Reference	:	BBMP/EE/BTP/WO/60/2021-22
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	10-05-22
Type of Mix	:	BC-Plant (Bituminous Concrete)
Date of Test	:	10-05-22
Oven Dry Weight	:	5000 Grams

IS Sieve Size (mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Secified limits as per MORTH specification table 500-17(grading-2)
19	0	0	0.0	100.0	100
13.2	55	55	1.1	98.9	90-100
9.5	802	857	17.1	82.9	70-88
4.75	858	1715	34.3	65.7	53-71
2.36	498	2213	44.3	55.7	42-58
1.18	462	2675	53.5	46.5	34-48
0.6	512	3187	63.7	36.3	26-38
0.3	577	3764	75.3	24.7	18-28
0.15	425	4189	83.8	16.2	12-20
0.075	418	4607	92.1	7.9	4-10
PAN	393	5000	100	0.0	0

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Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

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FOR CIVIL Pro.
R KARTHIK RECHAN
Authorized Signatory
Quality Manager

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M : 9972924526 | Tel : +91 80 23444801 | e : rechan6630@yahoo.co.in, civilproexperts@gmail.com

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TEST REPORT OF AGGEGRATE STRIPPING VALUE OF ROAD AGGRGATE (IS:6241)

Lab ID	:	**CP-RW-2023-03-30-37** **Date: 13-05-22**
Customer	:	Assistant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.
Address	:	Kodigehalli Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to roads and drains in Tatanagara, Devinagara and Surrounding areas in ward No. 08, Kodigehalli.
Agency	:	Sri. K M Nagesh, No:35/1, 19th B Main 14th Cross, 1st Block, Rajajinagara, Bangalore-560010
Customer Reference	:	BBMP/EE/BTP/WO/60/2021-22
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	10-05-22
Type of Mix	:	BC(Bitumenous Concrete)
Date of Test	:	10-05-22

Type of Binder	:	60/70
% of Binder Used	:	5.4%
Weight of Aggregate	:	200.0 gm
Weight of Binder	:	10.8 gm
Temperature of water bath	:	40°C

No of test	Retained Stripping Percentage	Stripping Percentage	Average Retained Stripping Percentage	Secified limits as per MORTH specification table 500-8
1	98.5	1.5	98.3	Minimum Retained Coating 95%
2	98.5	1.5		
3	98.0	2.0		

* The results obtained are satisfactory as per standard requirements.

Note:-
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Kodigehalli Sub Division
BBMP, Bangalore

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Quality Manager

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PHYSICAL REQUIREMENTS FOR COARSE AGGREGATE FOR BITUMINOUS CONCRETE

Lab ID	:	**CP-RW-2023-03-30-37**	**Date: 13-05-22**
Customer	:	Assistant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.	
Address	:	Kodigehalli Sub Division, BBMP, Bangalore.	
Project Name	:	Improvements to roads and drains in Tatanagara, Devinagara and Surrounding areas in ward No. 08, Kodigehalli.	
Agency	:	Sri. K M Nagesh, No:35/1, 19th B Main 14th Cross, 1st Block, Rajajinagara, Bangalore-560010	
Customer Reference	:	BBMP/EE/BTP/WO/60/2021-22	
Source of Sample	:	Sample supplied by Agency	
Sample Condition	:	Satisfactory	
Date of Receipt	:	10-05-22	
Type of Mix	:	BC (Bituminous Concrete)	
Date of Test	:	10-05-22	

Table 500-16 : Physical Requirements fo Coarse Aggregate for Bituminous Concrete

Property	Test	Result	Specification	Method of Test
Partical Shape	Flakiness Index	10.8	Combined Flakiness & Elongation Index for BC is Maximum 35%	IS:2386 Part I
	Elongation Index	13.2		
Strength	Aggregate Impact Value	23.5	Maximum 24%	IS:2386 Part IV
Specific gravity	Specific gravity	2.65	Maximum 2.7	IS:2386 Part III
Water Absorption	Water Absorption	0.28	Maximum 2%	IS:2386 Part III

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Kodigehalli Sub Division
BBMP, Bangalore

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Authorized Signatory
Quallity Manager

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TESTS RESULTS ON STABILITY OF MIX

Lab ID	:	**CP-RW-2023-03-30-37** **Date: 13-05-22**
Customer	:	Assistant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.
Address	:	Kodigehalli Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to roads and drains in Tatanagara, Devinagara and Surrounding areas in ward No. 08, Kodigehalli.
Agency	:	Sri. K M Nagesh, No:35/1, 19th B Main 14th Cross, 1st Block, Rajajinagara, Bangalore-560010
Customer Reference	:	BBMP/EE/BTP/WO/60/2021-22
Source of Sample	:	Hot Mix Plant, Bangalore
Sample Condition	:	Satisfactory
Date of Receipt	:	10-05-22
Type of Mix	:	BC (Bituminous Concrete)
Date of Test	:	10-05-22

The results of the tests conducted on the Bituminous Concrete mix sample are as follow

Sl.No	Particulars of observations	TEST 1	TEST 2	Secified limits as per MORTH specification table 500-11
1	Marshal Stability at 60°C, KN	11.56	11.88	10KN(min)
2	Marshal flow at 60°C, mm	3.72	3.58	2-4
3	Percent air Voids	4.55	4.78	3-5
4	Percent Voids in mineral Aggregate(VMA %)	14.78	14.51	13-15
5	Percent Voids filled with Bitumen(VFB %)	72.55	72.63	65-75
6	Density, g/cc	2.24	2.26	–

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Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

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R KARTHIK RECHAN
Authorized Signatory
Quality Manager

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TEST RESULTS OF BITUMEN BINDAR CONTENT AND GRADATION FOR BC
IS 2386 (Part 1) 1963 (RA 2011)

Lab ID : **CP-RW-2023-03-30-37** **Date: 20-05-22**

Customer : Assistant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.

Address : Kodigehalli Sub Division, BBMP, Bangalore.

Project Name : Improvements to roads and drains in Tatanagara, Devinagara and Surrounding areas in ward No. 08, Kodigehalli.

Agency : Sri. K M Nagesh, No:35/1, 19th B Main 14th Cross, 1st Block, Rajajinagara, Bangalore-560010

Customer Reference : BBMP/EE/BTP/WO/60/2021-22

Source of Sample : Sample supplied by Agency

Date of Receipt : 19-05-22

Type of Mix : BC (Bituminous Concrete)

Date of Test : 19-05-22

Sl.no	Description	Index	Trail 1	Trail 2
1	Weight of the Sample	W1	500	500
2	Weight of the sample After extraction	W2	474	474.5
3	Initial weight of Paper	W3	4	4
4	Final weight of Paper	W4	6	6
5	Increase in weight of Filter Paper	W5=W4-W3	2	2
6	Bitumen percentage	$\frac{W1-W2+W5}{W1}$ X 100	5.60	5.50
7	Average percentage	%	5.6	

Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

SHRIJAYA CONSTRUCTION AND CONSULTANCY

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R KARTHIK RECHAN
Authorized Signatory
Quality Manager

M : 9972924526 | Tel : +91 80 23444801 | e : rechan6630@yahoo.co.in, civilproexperts@gmail.com

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Lab ID : **CP-RW-2023-03-30-37** **Date: 20-05-22**

AFTER EXTRACTION - Trail-1

Total Weight of the Sample(gm) : 474

IS Sieve Size (mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Secified limits as per MORTH specification table 500-23(grading-2)
19	0	0	0.0	100.0	100
13.2	10	10	2.1	97.9	90-100
9.5	77	87	18.4	81.6	70-88
4.75	98	185	39.0	61.0	53-71
2.36	72	257	54.2	45.8	42-58
1.18	38	295	62.2	37.8	34-48
0.6	22	317	66.9	33.1	26-38
0.3	54	371	78.3	21.7	18-28
0.15	35	406	85.7	14.3	12-20
0.075	25	431	90.9	9.1	4-10

AFTER EXTRACTION - Trail-2

Total Weight of the Sample(gm) : 474.5

IS Sieve Size (mm)	Weight Retained (gm)	Comulative Weight Retained (gm)	Comulative % of Retained	Comulative % of Passing	Secified limits as per MORTH specification table 500-23(grading-2)
19	0	0	0.0	100.0	100
13.2	13	13	2.7	97.3	90-100
9.5	72	85	17.9	82.1	70-88
4.75	95	180	37.9	62.1	53-71
2.36	87	267	56.3	43.7	42-58
1.18	31	298	62.8	37.2	34-48
0.6	29	327	68.9	31.1	26-38
0.3	52	379	79.9	20.1	18-28
0.15	28	407	85.8	14.2	12-20
0.075	25	432	91.0	9.0	4-10

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Quality Manager

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Kodigehalli Sub Dn.
BBMP, Bangalore

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TEST REPORT ON BITUMEN

Lab ID	:	**CP-RW-2023-03-30-37** **Date: 06-05-22**
Customer	:	Assistant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.
Address	:	Kodigehalli Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to roads and drains in Tatanagara, Devinagara and Surrounding areas in ward No. 08, Kodigehalli.
Agency	:	Sri. K M Nagesh, No:35/1, 19th B Main 14th Cross, 1st Block, Rajajinagara, Bangalore-560010
Customer's Reference	:	BBMP/EE/BTP/WO/60/2021-22
Source of Sample	:	Sample supplied by Agency
Sample Condition	:	Satisfactory
Date of Receipt	:	04-05-22
Sample Type	:	Bitumen
Reference to BIS codes	:	IS: 1201-2021, IS: 1202-1220(1978) (Reaffirmed-2019)
Date of Test	:	04-05-22

Test Results

Sl.no	Name of Test	Result	Requirements as per IS:73-2013
1	Penetration at 25°C , in 1/10th mm	**55**	Min 45mm
2	Softening Point, °C	**51.2**	Min. 47°C
3	Ductility, cm	**98**	Min. 40cm
4	Flash point, °C	**310**	Min. 220°C
	Fire point, °C	**320**	

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Assistant Executive Engineer
Kodigehalli Sub Division
BBMP, Bangalore

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Authorized Signatory
Quality Manager

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DETERMINATION OF RATE OF SPREAD TACK COAT

Lab ID	:	**CP-RW-2023-03-30-37** **Date: 20-05-22**
Customer	:	Assistant Executive Engineer, Kodigehalli Sub Division, BBMP, Bangalore.
Address	:	Kodigehalli Sub Division, BBMP, Bangalore.
Project Name	:	Improvements to roads and drains in Tatanagara, Devinagara and Surrounding areas in ward No. 08, Kodigehalli.
Agency	:	Sri. K M Nagesh, No:35/1, 19th B Main 14th Cross, 1st Block, Rajajinagara, Bangalore-560010
Customer Reference	:	BBMP/EE/BTP/WO/60/2021-22
Sample Condition	:	Satisfactory
Date of Receipt	:	19-05-22
Type of Mix	:	Tack coat
Date of Test	:	19-05-22

Sl.No	Determination	Unit	TEST 1	TEST 2
1	Size of Plate (mxm)	Mt	0.30 x .30	0.30 x .30
2	Area of Plate (a)	Sq.mtr	0.09	0.09
3	Initial Wt of empty Plate (b)	Kg	0.78	0.748
4	Final weight of plate after application of tack Coat (c)	Kg	0.805	0.772
5	Weight of tack Coat (d=c-b)	Kg	0.025	0.024
6	Rate of spread of tack coat	Kg/sq.m	0.278	0.267
7	Average	Kg/sq.m	0.272	
8	Specified Limit	Kg/sq.m	0.250 Kg/sq.m	

* The results obtained are satisfactory as per standard requirements.

Note:-

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Assistant Executive Engineer
Kodigehalli Sub Divis...
BBMP, Bangalore

SHILPA CONSTRUCTION AND CONSULTANCY

Bruhat Bangalore Mahanagara Palike

NAME OF WORK : Improvements to Roads and drais in Tatanagara, Devinagara and surrounding areas in ward no -08, Kodigehalli

BAR CHART

Sl No	Description of Work	Unit	BOQ Quantity	EXE Quantity	Feb-23	Mar-23	Apr-23	May-23	Jun-23	Jul-23
1	Earthwork excavation by manual means for roads, drains & similar works in ordinary soil excavated surface levelled and sides neatly dressed, the disposed earth to be levelled neatly after breaking of clods complete as per specifications.	CUM	952.44	952.44						
2	Providing and laying Plain cement concrete 1:3:6 mix with OPC 220kgs with crushed stone aggregate 40 mm and down size graded granite metal coarse aggregates @0.892Cum and fine aggregates @ 0.465Cum machine mixed, machine mixed, concrete laid in layers not exceeding 15 cms. thick, well compacted, in foundation, including cost of all materials, labour, HOM curing complete as per specifications.	CUM	126.78	126.78						

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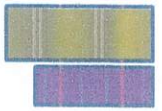
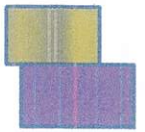
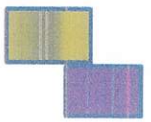
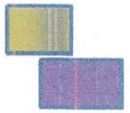
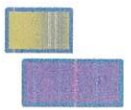
3	Providing T.M.T bars Fe 500 steel reinforcement for R.C.C work including straightening, cutting, bending, hooking, placing in position, lapping and / or welding wherever required, tying with binding wire and anchoring to the adjoining members wherever necessary complete as per design (laps, hooks and wastage shall not be measured and paid) cost of materials, labour, HOM of machinery complete as per specifications.	MT	15.81	15.81	
4	Providing laying plain/ reinforced cement concrete for side Drains Using M20 nominal mix Concrete with OPC at 300kgs.With 20mm and Down size granite metal coarse aggregate at 0.69Cum and fine aggregate at 0.43Cum Machne mixed, well compacted for wall and Bottom including centering shuttering,cost of materials,HOM of Machinery,Curing Etc.,Complete Excluding cost of Steel as per morth MORTH specification No. 1500, 1700, 2200. Including Cost of material, Labour, HOM complete as per Specification WALL & Bottom thickness 15Cm	CUM	280.91	280.91	

5	Providing and Fixing Pre cast covering Slab 100mm thick made out of CC, jelly 20mm Down size with steel reinforcement including form work,curing,including cost of alll materials, labour,hire charges of machinery, loading, unloading, lead and lift,transportation etc ,complete.As per Engineer incharge.	SQM	679.01	679.01	
6	Supply and fixing Precast reinforced concrete slab 250cm thick including cost of reinforcement as per design and drawing, material cost, transportation, hire charges of machinery, machine cutting the vertical face to get plain even surface etc., complete with all leads and lift conveynce charges, labour charges inclusive of cost of all materials.	SQM	38.88	38.88	
7	Providing and laying in position plain cement concrete of Mix 1:2:4 with OPC @ 240kgs, with 20mm and down size graded granite metal coarse aggregates @ 0.878 Cum and fine aggregtes @ 0.53Cum, machine mixed, concrete laid in layers not exceeding 15 cms. thick, well compacted, in foundation, plinth and cills, including cost of all materials, labour, HOM curing complete as per specifications.	CUM	7.40	7.40	

8	Providing and fixing pre cast solid cement concrete kerb stones made out of CC 1:2:4 with top and bottom width 114 and 165 mm respectively, 400mm high and 450mm in length finished with CM 1:3 plastering and finishing cutting including formwork, curing, including cost of materials, labour charges of machinery, loading and unloading, lead and lift, transportation ete.,complete. As per the direction of Engineer incharge.	NOS	822.00	822.00	
9	Providing and applying Painting in two coats with plastic emulsion paint of approved brand on wall surace to given an approved shade after throughly brushing the surfce, free from mortordrops and other foreign matter including preparing the surface even and sand paper smooth, cost of materials, labour complete as per specifications. with primer coat	SQM	129.46	129.46	
10	Excavation for roadwork in all types of soil by mechanical means including cutting and loading to tippers, trimming bottom and side slopes, in accordance with requirements of lines, grades and cross sections, and transportation with a lead of 1.00 km and complete as per specifications MORTH Specificatio MORTH Specification No.301Loading and unloading	Cum	188.25	188.25	

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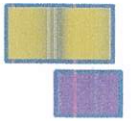
11	Compaction of original ground by mechanical means including filling in depression occuring during rolling including cost of all labour, HOM complete as per specifications.	SQM	627.50	627.50	
12	Providing, laying, spreading and compacting cushed stone aggregates of granite / trap / basalt to wet mix macadam specifications including pre mixing the material with water at OMC in mechanical mix plant carriage of mixed materials by tipper to site, laying in uniform layers with paver in sub-base/base course on well prepared surface and compacting with vibratory roller to achieve the desired density complete as per specifications	CUM	94.13	94.13	
13	Cleaning the existing black topped surface with brooms, soft brushes and finally dusting with old gunny bags and / or compressed air to receive bituminous treatment including cost of all materials, labour, HOM of machineries complete with all lead and lift as per the direction of engineer-in-charge	SQM	2725.00	2725.00	
14	Providing and applying primer coat with S.S. bitumen emulsion on prepared surface of granular base such as WMM including cleaning of road surface and spraying primer at the rate of 0.60 kg / Sqm using mechanical means complete as per specifications Clause 502 of MORTH V revision	SQM	627.50	627.50	

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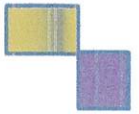
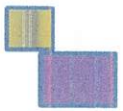
15	Providing, laying dense graded bituminous macadam using 40/60 TPH capacity H.M.P with Mechanical paver Gr-II (50mm to 75mm), crushed aggregates of specified grading premixed with 4.5% VG 30 grade bituminous binder and , transporting the hot mix to work site , laying to the required level and grade, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH table 500-10 complete in all respects complete as per specifications	CUM	49.08	49.08	
16	Providing and applying tack coat using 80/100 grade bitumen(VG10) on the prepared black topped surfaces at 2.5 kg per 10 Sqm, heating bitumen in boiler fitted with spray set (excluding cleaning of road surface) including cost of all materials, labour, HOM complete as per specifications	SQM	3079.00	3079.00	

17	Providing and laying bituminous concrete 40 mm thick with hot mix plant, using crushed aggregates of specified grading, premixed with bituminous binder and filler, transporting the hot mix to work site, laying with a paver finisher to the required grade, level and alignment, rolling with smooth wheeled, vibratory and tandem rollers to achieve the desired compaction as per MORTH specification clause No. 500.9 complete in all respects complete as per specifications. MORTH Specification No. 509 - using40/60 TPH capacity H.M.P. with Mechanical Paver Gr-II (30 mm to 45 mm) with 5.4 % VG-30 Bitumen	CUM	123.16	123.16	
18	Road Marking with Hot Applied Thermoplastic Compound with Reflectrising Glass Beads on Bituminous Surface/ Concrete Surface: Providing and laying of hot applied thermoplastic compound 2.5 mm thick including reflectorising glass beads at 250 gms per Sqm area, thickness of 2.5 mm is exclusive of surface applied glass beads as per IRC:35 standards specified. The finished surface to be level, uniform and free from streaks and holes complete as per specifications.	SQM	94.75	94.75